Presented to:

Technology Assessment and Transition Management (TATM) Overview

03 August 2009

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AMRDEC
STRENGTH THROUGH TECHNOLOGY

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

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Bottom Line Up Front

- **TATM Process fosters collaboration, leveraging, and cost sharing**
- **Facilitates transition and fielding of technology to the war fighter**
- **Uses disciplined, systems engineering based technology assessment and transition management**
- **Now being tailored and implemented by several organizations**

Background

Challenge

"…acquisition programs often incur cost overruns, schedule delays and performance shortfalls that undermine DOD's buying power. This dilemma is due in part to DOD's difficulty transitioning technologies from a technology development environment to an acquisition program."

- GAO Best Practices report, September 2006

- ***Need to address visibility of S&T to PEO-AV***
  - **Requirement to expedite transition**
  - **Allocation of resources**
  - **Understand scheduling (S&T/Acquisition)**
- ***Benefits***
  - **Voting technique to assess importance/priority**
  - **Metrics to evaluate S&T portfolio**
  - **HTI gaps**
  - **TTA generation**
  - **Solidified approach for acquirer/user/S&T/sustainer**

Visibility Closes the Transition Gap

Technology Transition Management Challenges

What is needed?
Expected?
When?
With how much risk?
Don't Care?

What is coming?
From whom?
When?
Does it work?
With how much risk?
My investment?

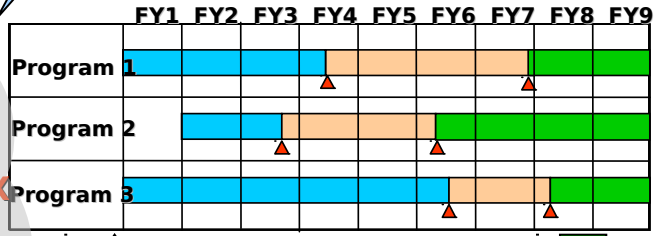
Current Transition Processes For S&T Projects

S&T Organizations

- Army S&T
- Other Gov't S&T
- U.S. Industry S&T
- International S&T

FOG OF TECHNOLOGY TRANSITION

PEO Programs



Products for the Warfighter

User Needs, Requirements, Experiments, Assessments

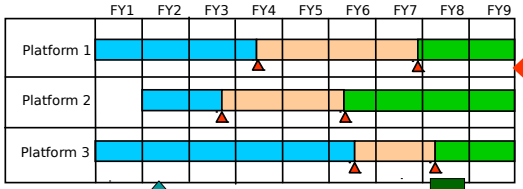
The TATM Process

Provides a Uniform Basis for S&T Transition

Management

- **Technology Assessment Language**
  - Agreed-to definitions
  - Common vocabulary
- **Assessment of Schedule**
  - Compatible programmatic milestone dates
  - Mutual awareness of progress/delays
- **Assessment of Risk**
  - Technical risk
  - Programmatic risk
  - Schedule risk
- **Risk Mitigation Planning**
  - Multiple contingent S&T initiatives where possible

PEO Programs



Army S&T
- DARPA
- LSI
  - IR&D
  - CRADA

Joint/Unified Laboratory
- Research
- Programs

S&T Objective Projects

Office of Homeland Security

U. S. Industry S&T

National Laboratory S&T

International S&T

Products for the Warfighter

User Needs, Requirements, Experiments, Assessments, Logistics Support and Training

TATM Process and Tool Suite Lifts the Fog of Transitioning Technology

TATM Can Provide

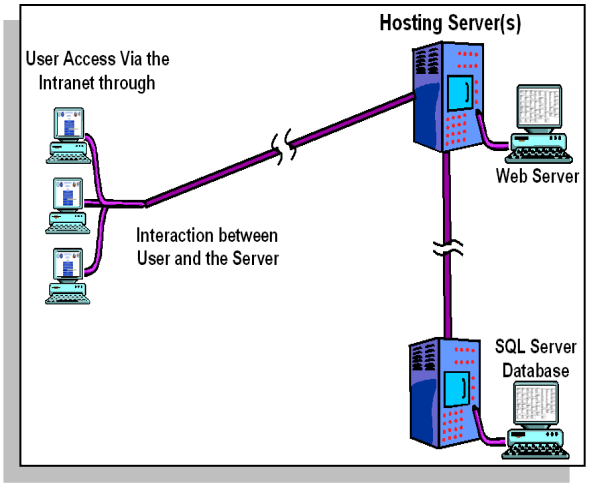
- **Optimized/Standardized communication among Stakeholders**
- **Central management of S&T investments across a system(s) domain**
- **Provide insight into S&T programs, cost, schedule and performance**
- **Integrate Army system level needs (across platforms) for S&T efforts**
- **Insight into S&T contributions for Force Operating Capabilities or Warfighter Outcomes**
- **Decision support Tool Suite that facilitates the process and provides:**
  - **Tracking of technology integration across all domains**
  - **Single repository for tracking research, development and engineering knowledge and capabilities**
  - **Matrices for HTI opportunities to maximize ROI across platforms**
  - **Enhanced visibility for leadership on investments and trends**
  - **Better tracking of the entire investment portfolio for S&T projects**
  - **Consolidated Roadmaps linking developing technologies with PEO acquisition programs and Warfighter Outcome Capability Needs**

TATM Tool Suite Benefits

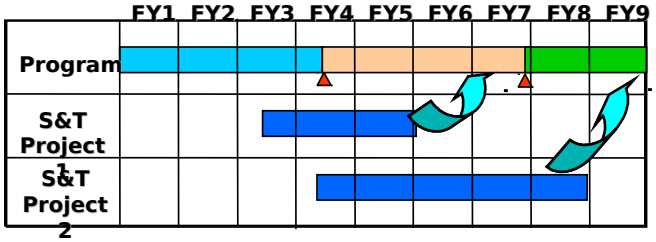
TATM has a decision support Tool Suite that facilitates the process through data collection and report generation. The Tool provides:

- ✓**Support – Facilitates TATM Process**
- ✓**User Friendly – Point & Click Operations**
- ✓**Collaborative Environment – Web-based to give you instant access to changing information**
- ✓**Secure – Login accounts allow the user to update only their information**
- ✓**Flexible – Capture any S&T Project and/or any Acquisition Platform**
- ✓**Robust – Allows filtering of key parameters.**
- ✓**Dynamic – Continuously changing information.**
- ✓**Custo**

Web-based



Customizable Reports



TRANSITION TECHNOLOGY FASTER

Input Data that is Collected

- **All S&T Project data normally found in quad charts, ASTMIS database, STO/ATO database, etc: descriptions, funding, TRL**
- **All Acquisition Program information for each platform: descriptions and key events, windows for transition opportunity**
- **Force Operating Capability Gaps**
- **Sustainment System Plans**

Input Data that is Generated

- **Project to Platform relationships that are established during the WIPT assessment**
- **Sustainer Assessment**
- **FOC Gap Contribution**
- **Technology Transition Agreement information**
- **Integration Readiness, Manufacturing Readiness**
- **Risk description and management**

RDECOM

TATM Tool Suite
Technology Transition Roadmap Report

AMRDEC STRENGTH THROUGH TECHNOLOGY

Technology Transition Roadmap

Acquisition Program							FY 2008 1	FY 2008 2	FY 2008 3	FY 2008 4	FY 2009 1	FY 2009 2	FY 2009 3	FY 2009 4	FY 2010 1	FY 2010 2	FY 2010 3	FY 2010 4	FY 2 1	FY 2 2
Black Hawk UH-60M Blk II							Tech Dev											Tech In	SD&D	

Science & Technology	Agency	Criticality PM	Criticality ST	Criticality User	Sust Assmt	TTA	FY 2008 1	FY 2008 2	FY 2008 3	FY 2008 4	FY 2009 1	FY 2009 2	FY 2009 3	FY 2009 4	FY 2010 1	FY 2010 2	FY 2010 3	FY 2010 4	FY 2 1	FY 2 2
Aircrew Survivability Technologies	AMRDEC AATD							$0.00				$0.00				$0.00				$0.00
Flexible Display Technology for Army	ARL	1*	1	1	MPI		⇦	$5.00				$5.00				$0.00				$5.14
Future Advanced Rotorcraft Drive System	AMRDEC AATD	3*	3	3	MPI	L 0.0						$0.00				$0.00				$3.36
Future Aeromechanics Concepts (FAC)	AMRDEC AFDD											$3.28				$2.65				$2.66
High Performance Rotary Wing Designs	AMRDEC							$2.85		5		$4.10		5		$5.32		5		$6.76
System Concept Studies	AMRDEC AATD							$1.11		2		$2.99		2		$2.36		2		$2.26
Aviation Rotorcraft Dynamics	ARL	2*	3		II		⇦	$2.31				$3.28				$2.37				$2.39
Advanced Antennas Apertures and Arrays	USARL SEDD	2*	3	3	MPI		⇦	$4.85		4		$3.88				$0.01				$0.27
Advanced Rotory Wing Concepts	AMRDEC						⇦	$2.83				$2.39				$1.52				$1.65
Exotic Non-comm Detection, Location &	CERDEC	1*	2		ZI							$0.00				$0.00				$0.00
Reconfigurable Rotors	AMRDEC							$2.01		4		$3.11		5		$0.00				$6.11
Advanced Affordable Turbine Engine	AMRDEC AATD	4*	4	4	MPI	L 2.0		$12.52				$10.68				$20.16				$13.70
Directed Energy/Non-Lethal Weapons	AMRDEC AATD							$2.32				$2.69				$2.72				$2.66
Intelligent Decision Aided Aircraft Survivability	AMRDEC,							$2.96				$6.75		5		$7.11				$7.55
Rotor Durability & Vibration Control	AMRDEC							$3.34		5		$4.46		5		$4.97				$2.48
Small Engine Component Technology	AMRDEC AATD	3*	3	3	SNI	L 0.0		$1.93				$2.04				$1.98				$2.50
Passive Infrared Cueing System	CE RDEC I2WD						⇦	$9.97				$10.27				$2.50				
Rotorcraft Airframe - Smart Structures	AMRDEC AATD	3*	3	4	MPI	L 0.0	⇦	$1.23				$1.00								
3rd Generation IR Imaging Technology	CERDEC						⇦	$4.40		6										
Advanced Drive System Technology (ERDS)		1*	3	2	ZI		⇦													
Atmospheric Effects of Polarimetric Imaging	USARL CISD	1*	1	2	ZI		⇦	$0.25		6										
Reconfigurable Rotor Blade	USN ONR	3*	3	4	MNI		⇦	$3.40												
Brownout and Whiteout Simulation	USA Corps of						2007/5													
Detection and Identification of Camouflaged	ARL	1*	1	1	MPI		2007/5													

Transition Window

Platform/Acquisition Lifecycle Key	
	O&S
	Prod & Deploy LRIP/IOT&E
	SD&D
	Technology Development
	Concept Refinement
	General
	Tech Insertion

Science & Technology Key	
	6.1
	6.2
	6.3
	6.4
	Unfunded
	Undefined
	ATD
	IR&D
	Proposed ATO
	ACTD
	6.7
⇦	Previous Funding
1 thru 9	TRLs
$	Millions per Year
*	Assessment Lead
Year/TRL	Ending Year/TRL

The Technology Transition Roadmap provides one single place where S&T Project development schedules and the Acquisition Program Schedules can be assessed for integration into the Platform's Lifecycle.

TECHNOLOGY DRIVEN. WA

TATM Tool Suite
Horizontal Technology Integration Report

Horizontal Technology Integration (HTI) / S&T Matrix

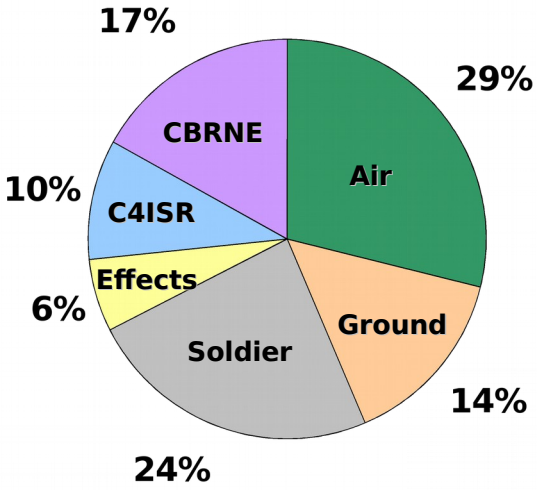
S & T Project Name	S & T POC	Agency	TTA Level			PM Utility											
						Black Hawk UH-60 ECP						Black Hawk UH-60M Blk II					
						Criticality						Criticality					
			Interest	Intent	Commit	PM	S&T	User	Sust	TTA	App	PM	S&T	User	Sust	TTA	App
Adaptive Vehicle Management System		AMRDEC	0	0	0												X
Advanced Affordable Turbine Engine	Lau, Mr. Ming	AMRDEC AATD	0	0	1							4	4	4	MPI	L 2.0	X
Aviation Structural Mechanics	Schuck, Mr. Jon	USARL VTD	1	0	0							4*	3	4	SPI	L 0.0	X
Future Advanced Rotorcraft Drive System	Butler, Mr. Gary	AMRDEC AATD	1	0	0							3*	3	3	MPI	L 0.0	X
Integrated High Performance Turbine	Lau, Mr. Ming	AMRDEC AATD	0	1	0							2*	3	5	MPI	L 1.0	X
Low Cost Active Rotor (LCAR) ATO	Mantay, Mr. Wayne	AMRDEC AFDD,	1	0	0							2*	3	4	MPI	L 0.0	X
Rotorcraft Adaptive Structures	Schuck, Mr. Jon	AMRDEC AATD	1	0	0							3*	3	4	II	L 0.0	X
Rotorcraft Airframe - Smart Structures	Schuck, Mr. Jon	AMRDEC AATD	1	0	0							3*	3	4	MPI	L 0.0	X
Rotorcraft Drive Systems for the 21 st	Lau, Mr. Ming	AMRDEC AATD,	0	1	0							2*	3	5	SPI	L 1.0	X
Rotorcraft Enhanced Survivability	Dinning, Mr. Malcolm	AMRDEC AATD	1	0	0	2*	3	4	MPI	L 0.0	X						
Rotorcraft Flight Control and Management	Tischler, Mr. Mark	AMRDEC AATD	0	0	0							3*	2	3	II		X
Rotorcraft Survivability	Wall, Mr. Ray	AMRDEC AATD,	1	0	0	3*	4	4	II	L 0.0	X						
SARAP ATO (Survivable, Affordable,	Schuck, Mr. Jon	AMRDEC AATD,	1	0	0							3*	4	5	SPI	L 0.0	X
SBIR - Crashworthy Ballistic Tolerant Fuel	Pilati, Mr. Bryan	AMRDEC AATD	1	0	0	3*	3	3	MPI	L 0.0	X						
SBIR - Improved Models for Coated CMC	Cox, Mr. Jeff	AMRDEC AATD	1	0	0	3*	3	3	II	L 0.0	X						
SBIR - Obstacle Display for Hover in	Szoboszlay, Mr. Zoltan	NASA	1	0	0	3*	3	3	II	L 0.0	X						
SBIR - Prognostic Wear Prediction Tool for	Smith, Mr. Bert	AMRDEC AATD	1	0	0	3*	3	3	MPI	L 0.0	X						
SBIR - Single Crystal Piezoelectric	Centolanza, Mr. Lou	AMRDEC AATD	1	0	0	3*	3	3	MPI	L 0.0	X						
Small Engine Component Technology	Lau, Mr. Ming	AMRDEC AATD	1	0	0							3*	3	3	SNI	L 0.0	X
Soldier Performance Modeling (JACK,	Leonard, Ms. Wendy	USARL HRED	0	1	0	3*	3	3	MPI	L 1.0	X						
		Totals	14	3	0												

Summary		Summary	
S&T Applicability =	8	S&T Applicability =	12
S&T in Interest TTA =	7	S&T in Interest TTA =	7
S&T in Intent TTA =	1	S&T in Intent TTA =	2
TTA Commitment =	0	TTA Commitment =	1

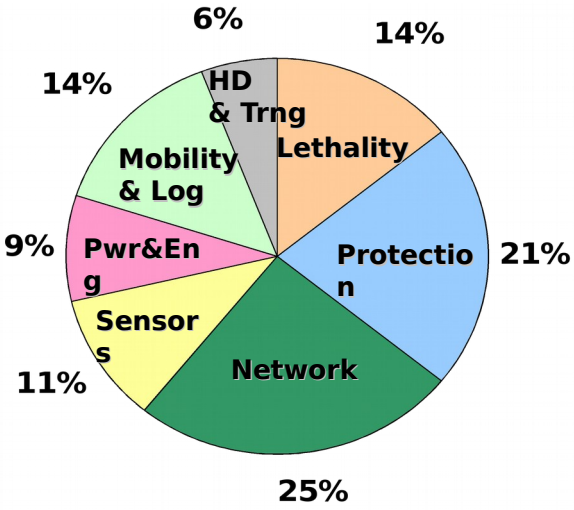
The HTI provides one single place where upper management can ensure the funding is allocated appropriately.

TATM Provided Metrics

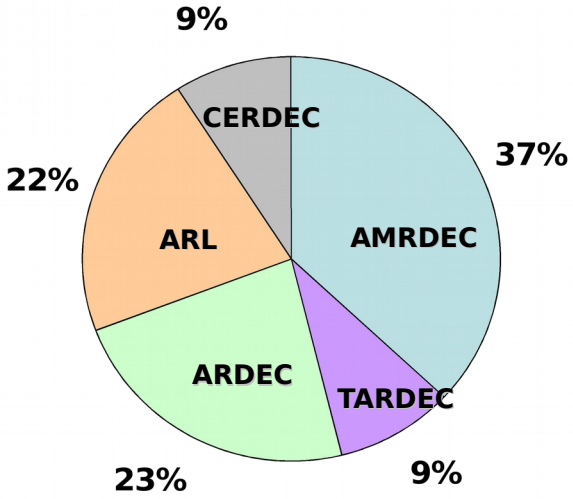
Example Metrics:



Network Resourcing by a System Domain



S&T Total Resourcing by Focus Area



Resourcing to Lethality by Organization

TATM's Adaptability

- **PEO Aviation since 2002**
- **Robotic Systems Joint Project Office (RS JPO) in support of the Ground Robotics Master Plan (GRMP) from 2005 until 2008**
- **PEO Soldier in support of Soldier as a System (SaaS) concept since 2007**

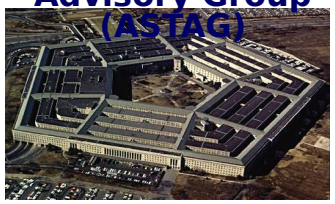
Lessons Learned

- **Each Stakeholder must see benefit in the Process**
- **Management support is necessary**
  - **Regular IIPT and EIPT meetings**
  - **Utilize the information generated**
  - **Adequate funding is *always* needed**
- **TATM Tool Suite data must be accurate and current**
- **Technology Coordinator role is pivotal to the Process**
- **TATM schedule provides for optimum benefit to Stakeholders**

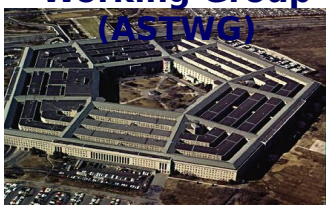
Questions/Comments

Backup Charts

PEO Aviation TATM Management Framework



Army S&T Advisory Group (ASTAG)



Army S&T Working Group (ASTWG)

- Warfighter Technical Council (WTC)
- Technical Council (TC)
- Acquisition Council (AC)

TTAs

Existing Army and DOD Process

Working IPT

Working IPT

Working IPT

Working IPT Input

Working IPT

Working IPT

Executive IPT

Integrating IPT

TTAs

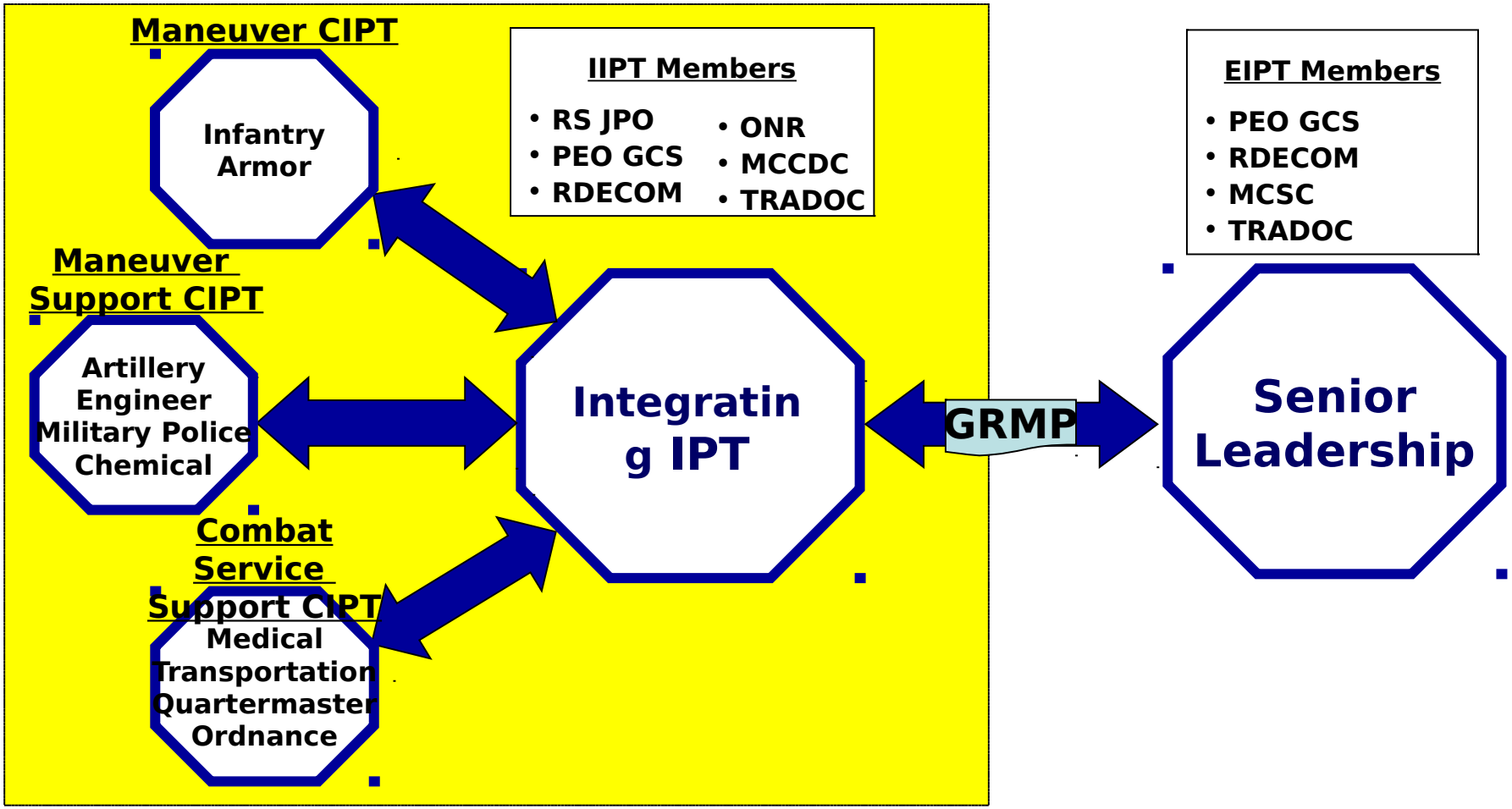
GOSC

CoDC

Council of Deputies/Directors and Colonels (CoDC)

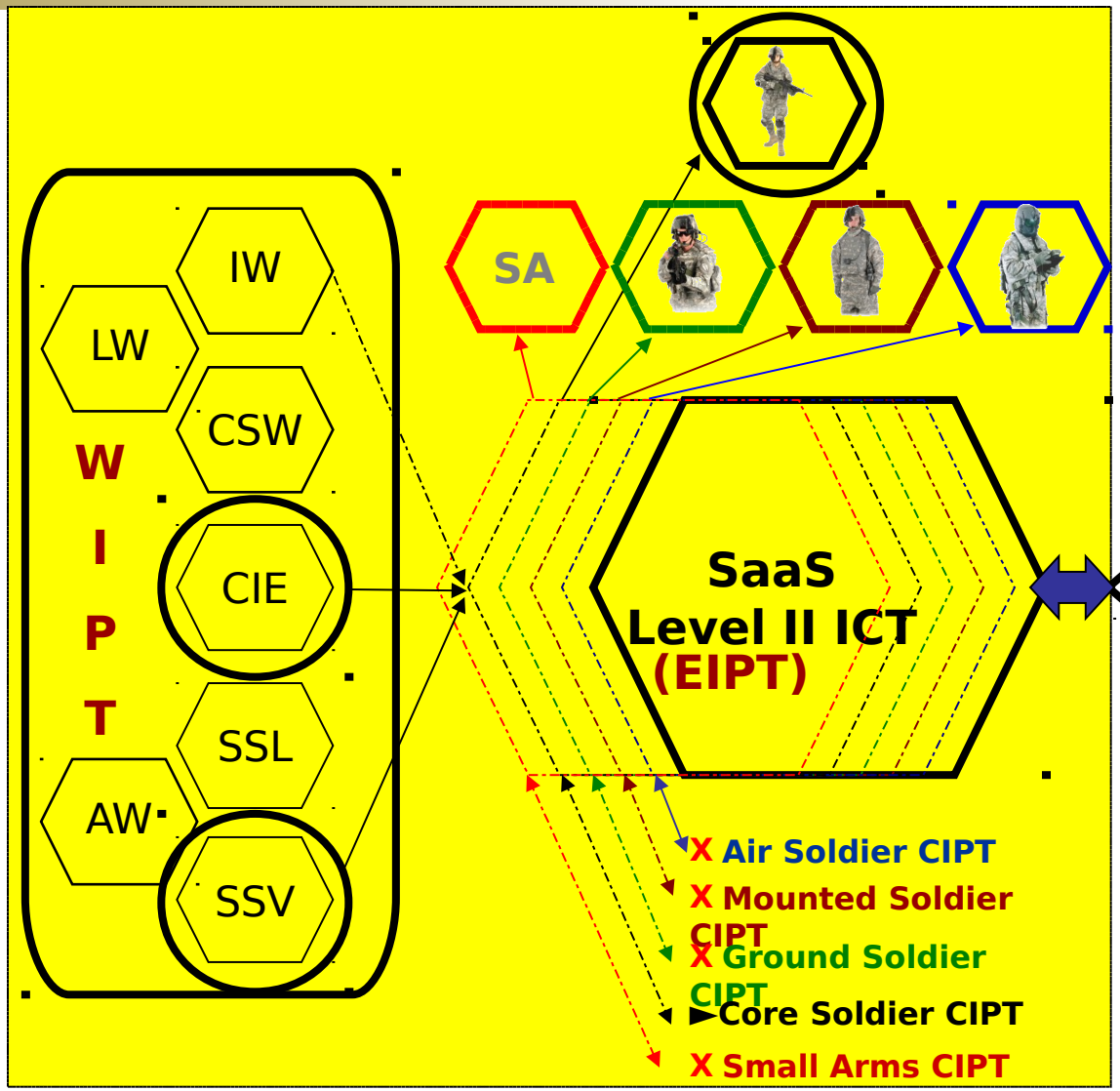
An Aviation GOSC

RS JPO TATM Management Framework



The TATM Process Ensures a Structured Approach to Developing the GRMP as a True Planning Document

PEO Soldier TATM Management Framework Overview (Core Soldier)



- JCTD
- ATO/MTO
- SBIR/STTR
- DACP/FCT
- Other

SaaS
Level I ICT
(GOSC)

GOSC Adjunct
- ARDEC
- AMRDEC
- AMCOM
- CERDEC
- CECOM
- TACOM
- PEO Ammo

Other Adjunct
- ARL
- DARPA
- ECBC
- TARDEC
- JPEO CBD

≈ 380 Products & /Programs

Objective 5 Coordinating IPTs

Draft/Pre-Decisional